	Application No.	Applicant(s)
Notice of Allowability	10/500,597	WATANABE ET AL.
	Examiner	Art Unit
	Randolph Chu	2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *11/23/2007*.

2. ☒ The allowed claim(s) is/are *1, 7, 17, 28, 34, 38, 44, 64, 70 and 80 (Now, renumbered to 1-10 for issue)*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some*   c) ☐ None of the:

        1. ☒ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

        Paper No./Mail Date _____ .

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☐ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

DETAILED ACTION

Allowable Subject Matter

1.   Claims *1, 7, 17, 28, 34, 38, 44, 64, 70 and 80* are allowed.

2.   The following is an examiner's statement of reasons for allowance:

The present invention is directed to a image processing method, and apparatus for performing contrast improvement process on an input image by comparing an object pixel of the input image with pixels that belong to surrounding areas of the object pixel. The prior arts in the record fail to teach or make obvious to a method, and an apparatus comprising the conversion curve estimation unit comprises: an initial candidate setting unit operable to set an initial population of search vectors that indicate conversion curves; a pixel value conversion candidate calculation unit operable to find a conversion value in a candidate for an enhanced image from the contrast improvement amount using a conversion curve candidate corresponding to each search vector; an evaluation value calculation unit operable to use the standard intensity value and the conversion value to calculate an evaluation value for evaluating the candidates of each conversion curve; a fitness calculation unit operable to calculate fitness of a candidate of each conversion curve based on the evaluation value; a recombination operation unit operable to perform recombination operation on a search vector selected based on the

fitness of the candidates of each conversion curve and generate a next generation

population; and an estimation end judgment unit operable to determine whether or not

estimation of the conversion curve ends at a current generation and together with

combination of other claimed elements as set forth in the independent claims 1, 7, 38,

and 44. Therefore, the claims 1, 7, 38, and 44 are over the prior art of records.

In other embodiment, The present invention is directed to a image processing

method, and apparatus for performing contrast improvement process on an input image

by comparing an object pixel of the input image with pixels that belong to surrounding

areas of the object pixel. The prior arts in the record fail to teach or make obvious to a

method, and an apparatus the contrast improvement unit comprises: a comparison pixel

setting unit operable to set positions in a vertical direction of pixels to be used in the

comparison from among pixels in the area surrounding the object pixel; a vertical

direction addition unit operable to add weighting in the vertical direction to the density of

the comparison pixels obtained by the comparison pixel setting unit; a simple

surrounding average unit operable to calculate comparison density for the object pixel

from a value at each horizontal pixel position in the surrounding area obtained by the

vertical direction addition unit; an improvement amount calculation unit operable to find

a contrast improvement amount from the comparison density and density of the object

pixel; a conversion standard value calculation unit operable to find a conversion

standard value for converting the contrast improvement amount to a value of pixel in the

enhanced image; and a pixel value conversion unit operable to convert the contrast

improvement amount to a value of pixel in the enhanced image based on the conversion standard value and together with combination of other claimed elements as set forth in the independent claims 17, 28, 34, 64, 70 and 80. Therefore, the claims 17, 28, 34, 64, 70 and 80 are over the prior art of records.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randolph Chu whose telephone number is 571-270-1145. The examiner can normally be reached on Monday to Thursday from 7:30 am - 5 pm.
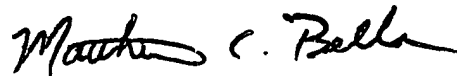
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

RIC/

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600